

CLIMATE CHANGE MITIGATION STRATEGIES FOR KENTUCKY

POLICY OPTIONS FOR CONTROLLING GREENHOUSE GAS EMISSIONS THROUGH THE YEAR 2020 AD

by

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EXECUTIVE SUMMARY

Emissions of greenhouse gases (GHGs) in Kentucky are projected to increase significantly unless several policy changes are implemented. A broadly-based technical advisory committee was formed to develop a range of policy options that could reduce GHG emissions without imposing undue economic burdens on Kentucky residents and businesses. Policy options to reduce the emission of GHGs in Kentucky have been designed to meet two criteria:

- (1) The policies proposed for consideration must not be too costly. Indeed, wherever possible, they should be designed to generate net benefits for the Commonwealth's economy.
- (2) The policies proposed for consideration must be flexible. It should be possible to implement them on a small scale at first, to expand or intensify them over time, and to adapt them as conditions change or as practical experience is gained.

Many of the policies presented in this report are enhancements or intensified versions of existing programs that are now being carried out by public and private sector organizations. Others represent new initiatives. The report presents the policy options first in a relatively modest form that could be implemented without large changes in budgets or investment patterns. Application of these modest proposals would achieve a reduction in the rate of GHG emissions equivalent to 13 million tons of CO₂ per year by 2020. These reductions, when coupled with a baseline reduction for carbon sequestration of 38.2 million tons, give a net emissions figure of 205 million tons per year for 2020. If larger reductions in GHGs are found to be necessary the policies can be maximized or adapted in ways that are described in Chapters 6 and 7. These maximum effort policies would result in reductions in emission rates of up to 52 million tons per year. Subtraction of these reductions along with baseline levels for carbon sequestration from gross 2020 emission projections give a net emissions figure of 167 million tons for 2020. This would be equivalent to the net emissions figure found for the Commonwealth of Kentucky for the year 1990. These results are summarized in the following table:

Sector	Policy Options to Reduce Greenhouse Gas Emissions	Modest Options (tons CO₂ per year)	Max. Effort Options (tons CO₂ per year)
Residential	Enforcement of building codes	231,255	952,022
	Home Energy Rating System (HERS)	66,909	509,378
	Solar heating for low temp. applications	28,984	130,119
	Solar electric systems	11,538	82,085
Commercial	Enforcement of building codes	583,074	2,332,296
	Energy efficiency in government buildings	94,227	456,336
	Solar heating for low temp. applications	21,805	94,227
	Solar electric systems	9,176	58,460
Industrial	Expanded IAC/KPPC programs	113,288	5,531,419
	Solar heating for low temp. applications	77,403	372,214
	Recovery of HFC-23 byproduct	3,131,004	6,258,309
	Coal-bed methane recovery	23,349	200,194
	Landfill gas recovery	720,000	1,440,000
Transportation	Feebates for fuel efficient vehicles	1,244,404	2,392,272
Utilities	Shift coal to gas (NGCC/IGCC/AFT)	3,652,701	10,950,702
Agriculture	Manure management	38,232	141,827
Carbon seq.	Urban forest management programs	272,888	2,728,879
	Rural forest management programs	2,767,905	17,146,098
Totals	Totals reductions due to for policy options	13,188,142	51,776,830
	2020 Baseline corrected for reductions	243,640,613	204,951,918
	2020 Baseline minus base sequestration	205,440,613	166,751,918

Several policy options were found to have significant potential for GHG emissions reduction. These include the following:

- Improvements in forest management and timber production leading to increased rates of carbon sequestration;
- The use of clean coal technologies and natural gas to generate electricity, replacing a number of existing conventional coal power plants;
- Reduction of the emissions of chlorofluorocarbon manufacturing byproducts;
- Improved end-use efficiency in the industrial sector; and
- Improved construction practices and enforcement of energy-related building codes in the commercial and residential sectors.

In addition, a variety of other policies and programs can be combined to yield significant reductions in GHG emissions.

Collectively, the sum of reductions derived from all options, large and small, was found to be sufficient to reduce Kentucky's GHG emissions in 2020 to the 1990 level, if the policies are implemented in a vigorous and sustained manner.